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10/598,592

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Juan de la Cierva Hoces

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EXAMINER

GREEN, RICHARD R

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/598,592	<b>Applicant(s)</b> DE LA CIERVA HOCES, JUAN	
	<b>Examiner</b> Richard R. Green	<b>Art Unit</b> 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4,6,7 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,4,6,7 and 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2006 and 06 March 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the

step where the rotor blades are independently retracted towards the stern of the aircraft until their longitudinal axes are aligned with the same direction as that of the aircraft's movement of claim 1 (functionally claimed in claim 7)

"the brake" of claim 1 (line 18 of the page)

means to stop the rotor in a transverse position of the blades of claim 7 (line 25 of the page);

symmetric profile of the rotor blades of claim 13;

thickness to chord ratio of 0.1-0.2 of claim 14 (since no chord profile is shown, no ratio is shown);

propellers placed on the stern of claim 17 (they are placed astern of the fixed wings, but not actually on the stern of the aircraft);

must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

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is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims **1 and 7** are objected to because of the following informalities:

The claims fail to comply with 37 CFR 1.75(i), which states, "Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation."

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **1, 4, 6, 7 and 13-19** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim **1** recites the limitation "the rotor's propulsion engine" in line 10 of the claim (line 12 of the page). There is insufficient antecedent basis for this limitation in the claim. The propulsion engines are not previously stated to be of the rotor, or clutched to the rotor.

Similarly, in line 18 of the page, "the brake" no longer has antecedent basis; "a brake" would be sufficient to overcome the rejection.

In claim 21, "the stem of the aircraft" lacks antecedent basis.

Regarding claim **1**, the final three lines require the limitation where "the reverse transition is accomplished by executing the above steps in reverse sequence and with the opposite actions." This is unclear however, because:

a) it is not clear which limitations above this line are distinct steps, since the word "step" is not used and the limitations involve multiple actions and so it is difficult to tell where one step ends and another ends;

b) no sequence of steps has been claimed, so it is not clear what the reverse sequence would be;

c) it is not always clear what the "opposite" action would be, for example when independently deploying the rotating blades, the opposite action could involve removing the blades from the wings, or instead the opposite action could be a synchronistic deployment of the rotating blades since synced deployment could be considered the

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opposite of independent deployment. Even if considered as opposite in order of occurrence with respect to time, not all steps give a distinct starting arrangement, which makes it unclear what the required final result of the opposite step would be, for example, in the limitation of rotating a rotor blade to 180 degrees on its pitch axis it is not clear what the step of rotating a rotor blade from 180 degrees on its pitch axis would result in, since the starting position of the blade is not stated; and

d) previously introduced are "a direct and reverse transition from helicopter mode to autogyro mode and a direct and reverse transition from autogyro mode to aeroplane mode", but in line 29 of the page only "the reverse transition" is stated, making it potentially unclear which reverse transition is meant. This confusion is compounded by the fact that two direct transitions are introduced, and then in lines 10-11 of the page only the helicopter-to-autogyro direct transition is mentioned, but the steps which it is claimed to consist of include steps which would appear to be part of a autogyro-to-aeroplane transition, such as placing the blades on the fixed wings.

**Note also** that the present amendment to the claims renders it unclear which steps are part of the helicopter-to-autogyro transition and which are part of the autogyro-to-aeroplane transition.

Additionally regarding claim **1**, in lines 21-23 of the page, the rotor blades are required to retract toward the stern of the aircraft until their longitudinal axes are "aligned with the same direction as that of the aircraft's movement". The limitation is however unclear because the direction of motion of the aircraft is variable and inconstant. It is not clear what direction the axes are required to be aligned with.

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Moreover, in a transition from autogyro to aeroplane, the aircraft's motion may have a substantial upward component; do the blades point downwards? The aircraft is also moving in different ways, including the circular motion of the rotor; do the blades align with that motion?

Additionally, in line 11 of the page, the helicopter to autogyro transition is claimed to consist of the limitations which follow. Are the ensuing limitations really 100% of the steps which are necessary to perform the transition? Claims 4 and 6 add additional step limitations, destroying the "consists of" terminology.

Claim 7 contains some of the issues discussed above; note additionally that in line 20 of the page "consisting of" appears, though the two engines are not the totality of the "driving means".

Regarding claim 17, are the propellers placed on the stern or astern with respect to the fixed wings? They do not appear to be mounted on the stern of the fuselage, and the phrase "on the stern with respect to the standard fixed wings" if interpreted to mean a physical stern does not distinctly describe a physical geometric relationship.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1, 4, 6, 7, 13 and 16-19** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN-5085315 to Sambell.

Regarding claims **1 and 7**, Sambell teaches in figs. 1 and 2 a convertible aircraft 10 with a fuselage 11, fixed wings 12 and 14 with ailerons (shown in figures), a tail 16 with rudders (shown in the figures), propulsion engines 18 and 20, rotors 32 and 34 with blades, and landing gear (it is strongly believed that the aircraft 10 comprises conventional landing gear, though since at least landing is taught in col. 1, lines 50-53, if the aircraft has no conventional landing gear, then the aircraft must land by impact of the bottom of the fuselage upon land or water, whereby the bottom of the fuselage is the landing gear), the aircraft converting from helicopter to autogyro to aeroplane using the following steps:

declutching the rotor from the engine (col. 4, lines 36-38);

adjusting the collective and cyclic pitches of the blades to essentially zero degrees, such that they cease to lift and control the aircraft (fig. 16, at point G; col. 5, lines 19-24 teach at least setting the collective pitch to zero; col. 3, lines 44-46 teach that the cyclic pitch is set to zero at some point during the flight of the aircraft);



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quickly reducing the rotational velocity of the rotor using a brake (col. 4, lines 39-55 teach how the rotational velocity of the blades is reduced and halted, this mechanism acting as a brake);

stopping the rotor in a transverse position of at least two of its blades, in a position essentially transverse to a direction of flight (the position of the blades in fig. 8 is transverse to the direction of flight of fig. 3, which was the direction of flight immediately prior to the stopping of the blades; alternatively, the flats of the blades are oriented transverse to the direction of flight);

retracting the blades towards the stern of the aircraft, independently from one another (the individual blades of the rotor assembly 32 retract independently to the stern in figs. 6-8);

rotating at least one of the blades to approximately 180 degrees on its pitch axis (col. 4, lines 25-28);

deploying the blades independently from one another to an azimuthal position determined by a pre-determined range of angles (fig. 1 or 8: the azimuthal position is directly aft);

adjusting the angle of attack of the deployed blades in such a way that they are placed on the aircraft's standard fixed wings (figs. 13-15 show the reverse process of how the blades are adjusted and fitted in a fixed relationship to the aircraft's fixed wings, the final position shown in fig. 1);

wherein the reverse transition is accomplished in reverse order (col. 4, lines 16-18 and 60-63; it is clear that the reverse transition occurs similarly, but in reverse order);

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particular to claim **7**, col. 5, lines 59-63 teach that electromechanical devices may be used in the control movements of the blades, And col. 7, lines 36-44 teach that an electric or hydraulic actuator may be used to control retraction and deployment of the blades.

If Sambell fails to teach landing gear, the examiner takes Official Notice that landing gear are known in the art, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to implement the aircraft of Sambell with landing gear, for the protection and comfort of onboard passengers and cargo during landing, and to preserve the structural integrity of the aircraft so that it may be reused.

Regarding claim **4**, the aircraft rises to an optimal flight altitude predetermined on the basis of atmospheric conditions and air traffic control (inherent for commercial flights).

Regarding claim **6**, the blades when placed on the fixed wings as in fig. 1 and 8, are arranged "in the form of a biplane with respect to the standard wings", since if viewed from the top, it appears to be in the form of the side view of a biplane.

Regarding claim **13**, the blades have a symmetric aerodynamic profile with respect to the chord of the blade's aerodynamic profile (fig. 11, at 32).

Regarding claim **16**, Sambell teaches engines with propellers 32, 34 (col. 3, lines 8-17 teach that the rotors have engines; rotors are propellers).

Regarding claim **17**, the propellers 32, 34 are placed astern of the fixed wings, in figs 1 and 8.

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Regarding claim **18**, the propellers 32, 34 have variable pitch (col. 4, lines 28-65 teach operations whereby the pitch of the blades is changed).

Regarding claim **19**, the engines are jet engines (col. 3, lines 1-3).

Claims **14 and 15** rejected under 35 U.S.C. 103(a) as being unpatentable over Sambell.

Regarding claim **14**, Sambell is silent on a thickness to chord ratio of 0.1-0.2, however such ratios are known and standard in the art, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to fabricate the blades of Sambell with a thickness to chord ratio of 0.1-0.2 to optimize aerodynamic performance, weight and bending strength, of the rotor blades.

Regarding claim **15**, Sambell is silent on having the rotors thicker at the root than at the tips, however it is known to taper rotor blades, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to taper the rotor blades of Sambell to concentrate the density of the rotating mass near the center of mass.

### ***Response to Arguments***

Applicant's arguments, see page 1 lines 10-12, filed 1/30/2009, with respect to numeral 20 have been fully considered and are persuasive. The objection to the drawings of 9/2/2008 has been withdrawn.

Applicant's arguments with respect to claims **1 and 7** have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN-4793572 to Mecca teaches a convertible aircraft wherein when converting from helicopter to airplane the blades stop in a transverse position and form fixed wings.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard R. Green whose telephone number is (571)270-5380. The examiner can normally be reached on Monday - Thursday 8:00 am - 6:00 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J. Carone/  
Supervisory Patent Examiner, Art Unit 3641

/R. R. G./  
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